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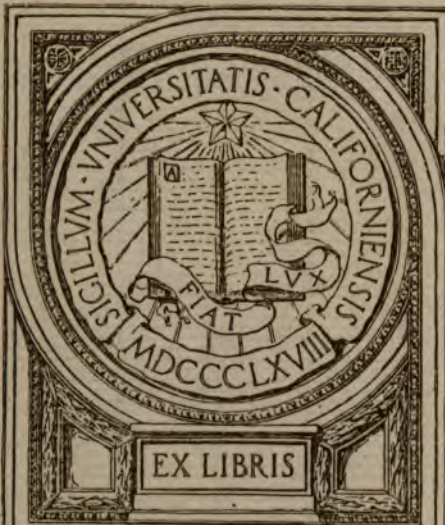
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**PERSONNEL VERSUS MATÉRIEL IN PLANS FOR
NATIONAL DEFENSE**

**PREPARED BY THE WAR COLLEGE DIVISION, GENERAL STAFF CORPS
AS A SUPPLEMENT TO THE STATEMENT OF A PROPER MILITARY
POLICY FOR THE UNITED STATES**

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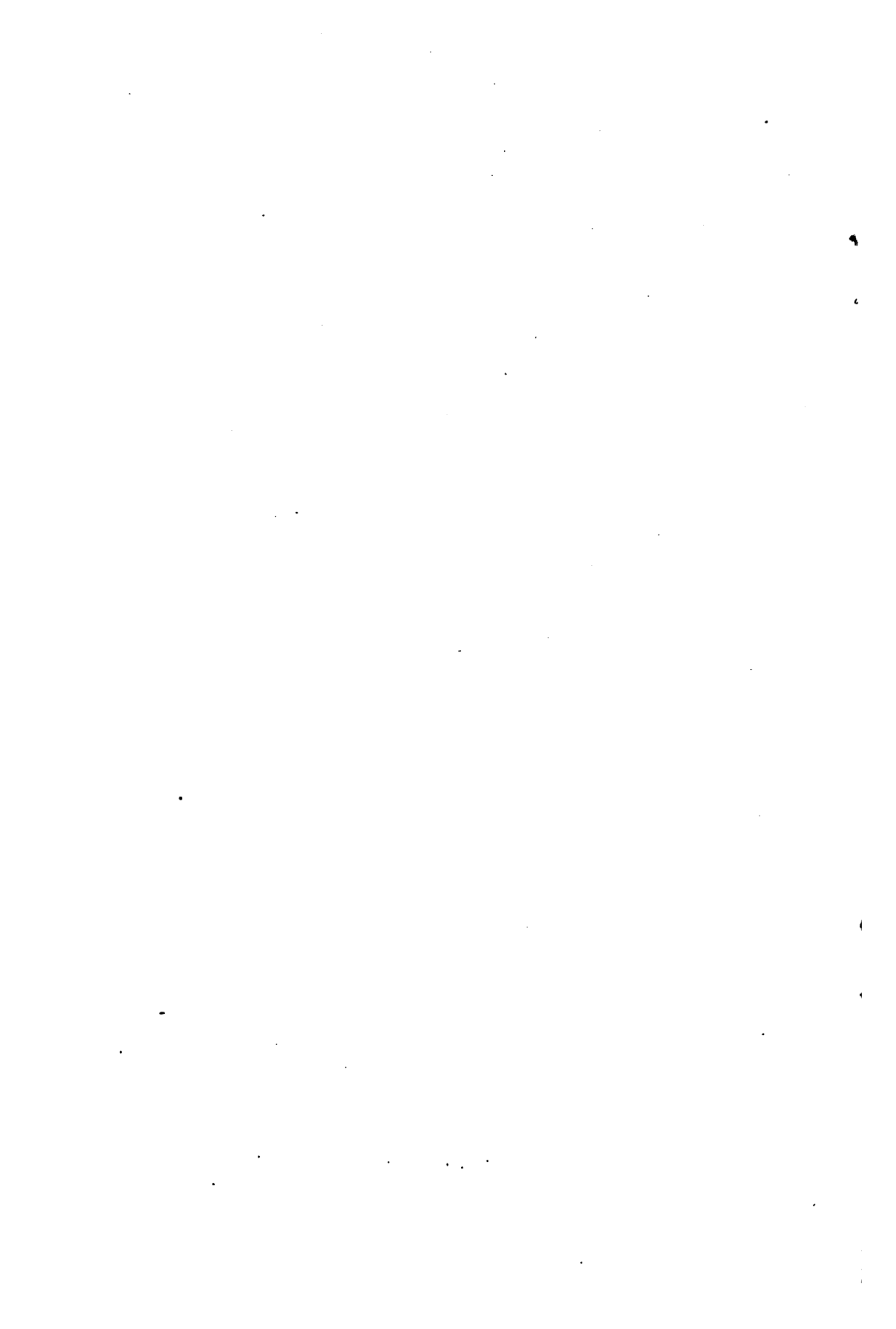
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PERSONNEL VERSUS MATÉRIEL IN PLANS FOR NATIONAL DEFENSE.

1. EFFECT OF VIEWS OF NOTED MEN ON PUBLIC OPINION.

Recently one of our most noted men in the field of science and invention was quoted in the press of the country to the effect that wars in the future will be fought by machines and not by men. The question of national defense is of such paramount importance at the present time that anything that a well and favorably known man says may have great influence in molding public opinion and thereby be productive of national good or national harm.

2. INFLUENCE OF PRESENT EUROPEAN WAR ON MILITARY POLICY.

It is believed that the deductions that have already been made from the present European war, and will be made in the future, will exert a vast influence in shaping our military policy. We should exercise, then, the greatest care that our conclusions are sound and not too hastily drawn. It is not the present war alone, but war in general that we must study, if we would reach sound conclusions. A conclusion that is drawn from a single example is almost sure to be wrong. For that reason the European war should be considered as only one of many wars that should furnish us the information in the light of which our military policy should be framed.

3. IMPORTANCE OF MATÉRIEL EXAGGERATED BY SPECIAL SITUATION IN FRANCE AND FLANDERS.

The great war now being fought in Europe has created in the minds of many influential people the fixed idea that matériel is everything in modern war and that personnel counts for but little. This idea has been fostered by a consideration of the situation as developed in France and Flanders, while the lessons to be learned from a study of the great campaigns in other theaters have been almost entirely overlooked.

4. NECESSITY OF MATÉRIEL AND LATEST MECHANICAL DEVICES IN WAR.

This is indeed an age of mechanics. The development in labor-saving machines and mechanical devices has been marvelous. The

machinery of war has kept pace with the development in the industrial field, and in many respects has even surpassed it. No one will contend that a mobile army not equipped with the most modern appliances of war—that is, magazine rifles, machine guns, field guns, aircraft, motor transport, etc.—can be successful in war. It is conceded that the United States should keep on hand matériel to fully equip an army of the size which we determine will be necessary to meet any of the first-class powers that are likely to attack us.

5. ARMS AND AMMUNITION REQUIRED FOR ONE MILLION MEN.

The following estimate of the supplies of rifles, machine guns, field guns, and ammunition that would be required by an army of a million men at the beginning of a campaign, under modern conditions, is based on a careful study of actual conditions in the European theater of war.

Army of 1,000,000.

Article.	Reserve supply at opening of war. (Estimated loss and expenditure during first four months of war.) ¹	Supply with troops for mobilization. ²	Monthly supply for first four months. ³			
			First month.	Second month.	Third month.	Fourth month.
Rifles.....	500,000	800,000	90,000	180,000	180,000	90,000
Machine guns.....	2,500	5,000	400	800	800	400
Cartridges.....	2,250,000,000	1,020,000,000	500,000,000	1,000,000,000	1,000,000,000	500,000,000
Field guns.....	3,000	6,000	500	1,000	1,000	500
Ammunition for field guns.....	10,000	2,000	2,000	2,000	4,000	2,000

¹These supplies are to be maintained at these figures at all times during the war to provide a reservoir.

²In the case of the rifle cartridges the amount may be too small.

³These amounts show the estimated expenditure for each of the first four months of the war.

⁴Rounds per gun.

6. VITAL IMPORTANCE OF TRAINED PERSONNEL IN WAR.

A study of the above figures shows the vital importance of matériel in modern war and the hopelessness of any war in which we might be engaged with any country having a trained army, should we fail to be amply provided with such matériel. But many people believe that, if we are well supplied with the modern machinery of war, there will be no need of a trained personnel. There can be no greater fallacy nor one likely to bring greater disaster to the country if acted on to the extent that some influential men believe possible.

7. AN ARMY A COMPLICATED MACHINE.

It must not be forgotten that an army itself is the most marvelous and, at the same time, the most complicated machine connected with the carrying on of war, and to the degree of perfection with which

it is organized, trained, and equipped in every part and detail will depend victory or defeat.

8. TRAINED OPERATIVES IMPERATIVE FOR COMPLEX MACHINERY.

A chain is no stronger than its weakest link. It might as well be contended that one of the parts of a giant locomotive could be made of indifferent metal, as that an efficient army could be made up of an untrained personnel. As the weak part of the locomotive will sooner or later snap and break, and probably at the most critical time, so will an army of untrained or partially trained men go to pieces under the great shock of modern battle. As well might we say that it is as possible to go into the streets of one of our cities, or to our farms, pick up a lot of untrained men and set them to work with the intricate machinery of one of our great gun factories, as it is to put the same men to handling the complicated machines of modern war or to make them parts of that most complex of all machines, a modern army, and expect them to be successful against a highly trained and organized army of one of the first-class powers. As you would expect the gun factory to be speedily disorganized and disabled by such a proceeding, just so surely will an army of untrained or partially trained men come to disaster in the stress of war, and all the latest types of rifles, machine guns, high-powered cannon, aeroplanes, motor transport, and mountains of ammunition in its possession will not and can not save it.

9. CORRELATION AND INTERDEPENDENCE OF THE MOBILE ARMS.

The tendency to exaggerate the importance of matériel in modern war and to underrate personnel comes from the superficial conclusions which have been drawn from the observations that have been made of the present war in Europe, and, as stated above, the events in Flanders and France, likewise in the Dardanelles, where the war has settled to the condition of a siege on both sides, have formed the basis of most conclusions, while the operations in the eastern and Serbian theaters, which probably more nearly approach those of any war in which the United States might be engaged, have practically been overlooked.

To be sure, in this siege warfare the rôle of artillery takes on considerable importance, and only the large cannon can crush casemates buried several meters under the earth. To it falls almost the entire task of the preparation against an enemy who is at the same time too close and invisible and who thus escapes both the 75-millimeter shell and the bullet of the rifle. But as soon as this zone of siege warfare is crossed and space is opened, the bullet will recover its field of action beyond that covered by the 75-millimeter gun, the cannon of maneuver warfare. The war of 1914 has cruelly proved to us that between the preparation of the attack by the artillery and the execution

of this attack with the bayonet a period and a zone intervene where the infantry should be supreme, if it knows how to deliver a fire that kills. * * * This man is the king of the battle field; he rules it through his intelligent fire, his aimed bullets, which the accurate rifle has cured from being wild; he rules it by the work which completes and continues the preparations of the artillery and which will make easy the effect of the bayonet against an enemy already three-quarters annihilated. (Gen. Cherfils, French Army.)

In short, the rôle of the mobile arms has not changed materially; in other words, we must still have artillery to destroy the enemy's position, infantry to assault and drive him from it, and cavalry to pursue and complete his destruction. It should, moreover, be borne in mind that in point of time mobile operations precede the static and are therefore the first in order of preparation.

10. INFLUENCE OF MATÉRIEL ON ISSUE OF WAR—TRAINED PERSONNEL VITAL REQUISITE.

The influence of matériel on the issue of a war is usually much overemphasized. It floats on the surface of events, where it catches the eye of the superficial observer, ignorant of the profounder movements beneath. This tendency to overrate its influence is increased by the natural human inclination to attribute defeat to matériel rather than personal causes. It is natural for men who have spent all their time and best efforts in the field of science and invention to believe that the mechanical or matériel side of war is all-important, but there can be no greater mistake. A trained personnel has been a most vital requisite of armies in the past and will continue to be in the future.

The whole military history of the United States proclaims the truth of this.

11. RESULTS OF EMPLOYMENT OF UNTRAINED TROOPS BY UNITED STATES IN PAST WARS.

During the Revolutionary War the Colonies depended almost entirely on untrained or partially trained men. During the entire course of this war Great Britain employed not more than 150,000 men, yet the total number of British troops in the Colonies at any time was very much less; while the Colonies themselves used 395,858 men, notwithstanding which the largest force that Washington was ever able to assemble for battle at one time was about 17,000. Speaking of the unreliability of untrained or partially trained troops, he said:

Regular troops alone are equal to the exigencies of modern war, as well for defense as offense, and when a substitute is attempted it must prove illusory and ruinous. No militia will ever acquire the habits necessary to resist a regular force. * * * The firmness requisite for the real business of fighting is only to be attained by a constant course of discipline and service. I have

never yet been witness to a single instance that can justify a different opinion, and it is most earnestly to be wished that the liberties of America may no longer be trusted, in any material degree, to so precarious a dependence. (Washington.)

During the War of 1812 the United States employed 527,654 men, of whom only a small proportion were regular soldiers, and most of these were Regulars in name only, for the majority of regular regiments were organized after the beginning of the war, while Great Britain employed only 67,000 men, and never at one time had more than 16,000 men opposed to us on any field of battle. That we did not suffer a great disaster was undoubtedly due to the fact that Great Britain, during this entire war, was engaged in her gigantic contest with Napoleon, and used only the odds and ends of her military forces against us.

The Civil War was fought by volunteer troops on both sides, and it was not until the United States had spent several fruitless years in training her new armies and had suffered great losses in men and money that we had any real military success. Competent critics are of the opinion that had the United States had at the first Bull Run a brigade of Grant's veteran army that brought about the surrender of Lee at Appomattox there would have been no Civil War. The Confederates were almost as badly demoralized by their victory in this battle as the Federals were by defeat, but their victory gave time, priceless almost beyond anything else in war to an unprepared nation, to train and equip their armies. The money that was spent during that war and has been spent since on the aftermath of it (pensions, interest on the national debt, etc.) would have maintained and would now maintain an army that would insure the United States adequate defense.

12. EMPLOYMENT OF UNTRAINED TROOPS BY FRANCE DURING FRANCO-PRUSSIAN WAR.

The folly and futility of intrusting the interests of a nation in war to untrained or partially trained troops can not be better illustrated than by the experience of France following the surrender of the French Army at Metz in 1870.

Marshal McMahon surrendered the army of Chalons on September 2; Marshal Bazaine surrendered the army of the Rhine at Metz on October 27. * * * The war should have ended then, but there were hundreds of thousands of patriotic men left in the country, and there were statesmen then, as now, who thought nothing was necessary to create an army except to collect men and place arms in their hands.

At Paris the Empire had been overthrown and a provisional government established at Tours, with Gambetta as virtual dictator. This extraordinary man, whom no misfortune could conquer, set to work to raise armies, and with such herculean energy and ability that within a few weeks half a million men

had been assembled and fairly well equipped. Armies of 100,000 men were improvised almost overnight in the northwest and south. Unfortunately Gambetta found no leader of his own mold, and his tireless efforts finally went for naught.

Nor were the armies themselves ever competent. Time was lacking. The experienced officers were almost all prisoners of war. Organization was loose; supplies irregular or lacking; even the clothing was insufficient for a winter campaign. Poor discipline, wounds, disease, exhaustion, cold, and famine ravaged these vast armies of volunteers and conscripts and strewn the roads of France with their débris.

Unless it be the retreat from Moscow, there is no sadder picture in all history than one of these intensely patriotic but helpless bodies of men, driven about by the iron German veteran armies, suffering all possible miseries and wretchedly perishing to no purpose during the winter of 1870-71. They did not even have the satisfaction of inflicting heavy losses on the enemy, as did the armies of McMahon and Bazaine; but with little loss to the Germans sacrificed themselves by thousands in hopeless defeats and then struggled off along the roads, carrying disease to the villages which sheltered them and themselves perishing uncared for in the snow. Their history should be a terrible example for those who trust in new levies against experienced and efficient regular troops. (*Le Corps de Sante Militaire en France*, by Brice et Botteet.)

Anyone who believes that an army can be called into existence overnight or that the liberty of a country can be intrusted to an army of untrained or partially trained troops should read the pitiful story of these armies of Gambetta, from which the above is quoted.

13. RELATIVE IMPORTANCE OF MATÉRIEL AND PERSONNEL— STATEMENT OF GEN. VON BERNHARDI.

In an article contributed to the New York Tribune, Gen. von Bernhardt, author of "Germany and the next war," tell us what observations show to be true when he says:

It is constantly said on the other side that the success in a decisive manner depends on the quantity of munitions which is available, and that, aside from the superior masses, the technical means were instrumental to success. It is constantly emphasized that, in contrast to former wars, these factors are to-day determining. How little have men who hold this belief penetrated into the real spirit of the war! Munitions in sufficient quantities certainly are essential in warfare, and the technical means of warfare are certainly an important factor to success, and it is surely not of little importance that just in this respect, in the technique of war, we are in advance of our enemies. The superiority in artillery and in number is, of course, of prime importance. *The masses, however, win their decisive importance only when they have been trained in discipline and capability, are full of belligerent spirit, and are led by men who are thoroughly aware of what brings results in war and who are masters of their professions or, rather, art. Munitions and technical war materials achieve their full value only when they are used with a purpose and with valiant military spirit.*

14. LIMITATIONS OF A "RAW ARMY"—NAPOLEON. NUEVE CHAPELLE AN EXAMPLE.

With a raw army it is possible to carry a formidable position, but not to carry out a plan. (*Napoleon.*)

15. TIME REQUIRED FOR TRAINING NEW LEVIES—OPINION OF AN AMERICAN IN BRITISH ARMY.

The course of very intensive training prescribed for the new levies of the British Army at the beginning of the war contemplated having them ready for active service on the firing line in six months. But few of these men were sent to France with less than nine months' training. What was the reason for the change of plan of the British Army authorities, especially in view of the great and pressing necessity for troops in France? It is believed that it was found that troops with the six months' very intensive training which had been given them had neither the physical hardihood, the morale, nor the knowledge of the business of war which was absolutely essential to make progress against the intrenched troops opposing them. In this connection the following quotation from a letter written by an American now serving with the British Army in France, is pertinent:

In common with all of my comrades in one of the first units of Lord Kitchener's first citizen army, I believed that within a few weeks of enlistment we should be fighting side by side with the seasoned regulars of the first British expeditionary force. But after three months of hard work we began to appreciate the tremendous difficulties of the task we had in hand. During those three months we had worked from 5.30 in the morning until 4.30 in the afternoon every day in the week, Sunday excepted. And yet, at the end of that time, we had mastered only the fundamentals of squad, platoon, and company drill and some elementary knowledge of battle formations and of the use of our rifles. We were no more cohesive than so many grains of wet sand. We were still so many individuals, fretting under the restraints of discipline, and no more fit to be called soldiers than apprentices of three months are to be called mechanics.

Many of the men had been used to a healthy out-of-doors life, but even they were far from fit for the rigors and hardships of soldiering. How much less so were those indoor workers—the clerks, the shop assistants, the small merchants—fit for it. * * * But it was not until they had been through months of the hardest kind of work that they were physically efficient. Ten or twelve weeks' training would have never given these men the physical stamina enabling them to endure the terrible fatigues of a rapid strategic retreat like that from Mons. They would have dropped out on the roadside by tens of thousands, to be gathered in by the swiftly advancing enemy. * * * And so we went on from week to week and from month to month, and it was not until we had been trained for nine months that we were sent to the "Somewhere Trench" to take our part in the greatest war in history. * * * Four months of active service in France has convinced us how necessary, how vitally necessary, these nine months of preparation were. We had been unconsciously acquiring the ability to act instinctively, and this is unquestionably the most important, as well as the most difficult thing a soldier must gain.

Work must always be done with the sureness and promptitude of instinct. Otherwise, in the heat of battle, when all men are laboring under the stress of great excitement, the soldier is lost and useless. Battalions must be units in the strictest sense of the word, orders must be obeyed without a moment of hesitancy. * * *

With my own year of experience as a criterion, I am firmly of the opinion that, in order to become even fairly good soldiers, men must have at least a year of training. The will to be defenders is nothing unless there is back of it long and careful preparation. (Outlook, Nov. 3, 1915.)

With all this intensive training over a period of nine months or more, and some months' actual experience in war, the British forces have not up to the present time undertaken a sustained general offensive.

16. DEDUCTIONS FROM BRITISH LOSSES IN PRESENT EUROPEAN WAR.

That wars in the future will be fought by men, as they are at present and always have been, and that trained officers and men will be required in ever-increasing numbers is shown by the enormous losses sustained by the British Armies from the beginning of the war up to October 9, as announced officially by Premier Asquith to the House of Commons:

Total casualties, 493,294. The losses for the western area were distributed as follows:	
Killed, officers	4, 401
Wounded, officers	9, 169
Missing, officers	1, 567
Total	15, 137
Killed, other ranks	63, 059
Wounded, other ranks	225, 716
Missing, other ranks	61, 134
Total	349, 909
Total casualties in all operations:	
Killed, officers	6, 660
Wounded, officers	12, 633
Missing, officers	2, 000
Total	21, 293
Killed, other ranks	94, 992
Wounded, other ranks	304, 832
Missing, other ranks	72, 177
Total	472, 001

British casualties up to August 21, as given officially on September 14, were 381,983. This shows a total between that time and October 9 of 111,311, or a daily average of 2,271. Losses between June 9 and August 21 averaged about 1,500 daily.

After a study of the above table of losses it is not understood how anyone, whether civilian or soldier, can maintain that the rôle of the human element in war has been or can be decreased. Rather is it seen that the enormous losses suffered by troops in battle require ever-increasing numbers of men to be trained in peace and held in

reserve to take the place of the fallen, and that time will probably never again be available to train new troops in large numbers after war begins. It is said that the British Regular Army, as it existed at the beginning of the present war, practically disappeared during the first campaign in France; that is, in the retreat to the Marne and the subsequent advance to the Aisne. The British losses in officers and men were so enormous that there was practically no trained personnel left available for the instruction of the new levies, which undoubtedly accounts somewhat for the delay in sending the new units to France.

17. DEVELOPMENT OF ARMIES—PEACE TRAINING NECESSARY.

"The time required for raising extemporized armies depends largely on the presence or absence of trained instructors. If there be a corps of trained officers and noncommissioned officers and a tested organization of higher units with trained leaders and staff officers, the problem of training is limited to the training of the private soldier. * * * But where the leaders themselves are untrained, and where the officers and men must alike stumble toward efficiency without intelligent guidance, the formation of an efficient army is a question of years; indeed, such a force can not become an army at all within the period of duration of modern war. The American war of 1861-1865 presents the singular phenomenon of two extemporized armies gradually developing while in conflict with each other and is a most remarkable record of the evolution of such forces. In the conflicts of 1861 both officers and men were untrained for the duties demanded of them. Even the companies were imperfectly organized as units of the regiments, and the lack of cohesion was still more apparent in the higher units. * * * But even in the early stages of the war the influence of trained and able leaders was apparent. The time required to make an effective soldier depends very largely on the organization in which the recruit is enrolled. The recruit of 1861 could not become a good private until his captain became a good captain, but the recruit of 1863 was absorbed in a team already trained, and therefore became a trained soldier in a few months of active service. But, while the history of the Civil War is instructive as a record of military evolution, it can not be invoked as a guide of military policy, for we can count upon it that in our career as a world power no serious competitor will ever oppose us with extemporized armies. * * * It should be a fundamental principle of American policy that no officer should be intrusted with the leadership of American soldiers who has not prepared himself for that responsibility in time of peace. The American soldier, whether regular or volunteer, is entitled to trained leadership in war."—Organization of the Land Forces, 1912.

18. CONCLUSIONS.

The present European war has demonstrated—

1. That the leading of an untrained or partially trained and ill-armed citizen soldiery against an army of trained veterans, with all the enginery of modern warfare, results in useless, senseless slaughter.

2. That in direct proportion as warfare becomes more scientific, complicated, and expensive does it require longer time to prepare for war, both in the matériel of war and in the training of the soldiers.

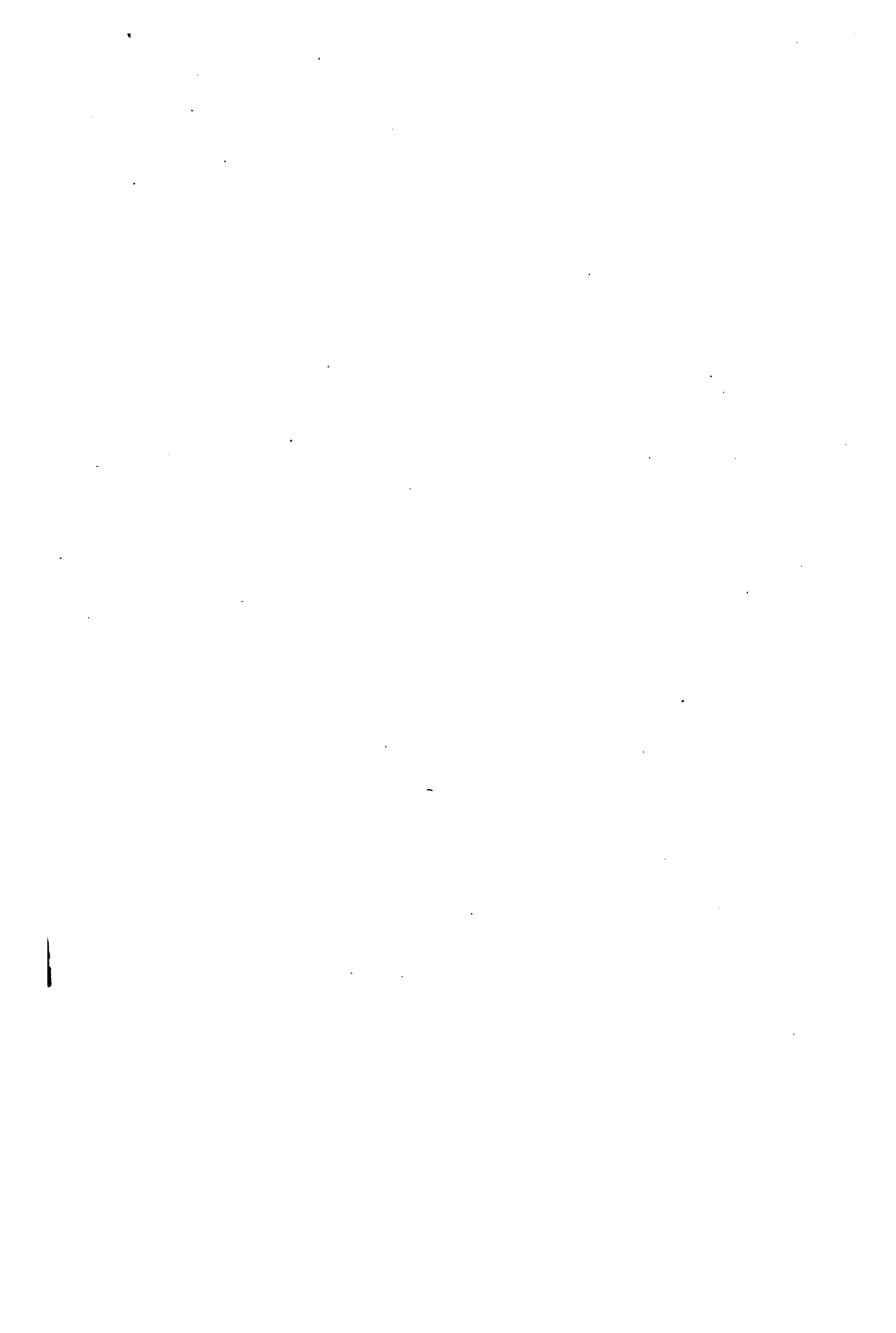
3. That the United States can not rely on having time to raise and equip new armies after the declaration of war, unless we have allies with well-trained armies to stand between us and disaster while we are preparing. Our traditional policy has been against entangling alliances.

4. That in making deductions from the operations and events of the present European war we should consider the events not alone in France and Flanders and the Dardanelles, which have developed into siege warfare, but the operations in other theaters which approximate more closely what would happen in the United States should they be attacked.

5. That it is necessary to have on hand at the beginning of war material for the equipment of all troops to be mobilized during the first three months of the war, and that this equipment should be accumulated by complete division units.

6. That modern armies, to be successful, must be well balanced—that is, composed of the proper proportions of infantry, cavalry, artillery, and special troops—and that if any arm or corps is lacking in time of peace successful military operations will be delayed until it is brought up to its due proportion.

7. That in the wars of the future matériel will play a very important part; but in the last analysis that side will be successful, other things being equal, which can longest supply reserves of adequately trained and disciplined officers and men.



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